

U.S. Patent Application Serial No. 10/520,272
Amendment filed March 12, 2007
Reply to OA dated December 11, 2006

AMENDMENTS TO THE CLAIMS:

Claims 1-12 are pending in the application. Of which, claims 3, 8, 11 and 12 are cancelled.

Claims 1, 4, 5, 7, 9 and 10 are amended.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A dry etching method for forming ~~characterized in that a~~
resist film ~~formed~~ on a substrate comprising: is

irradiating a substrate with a resist film formed thereon ~~irradiated~~ with radiation having a
wavelength of not more than 195 nm to form a resist pattern having a minimum line width of not
more than 200 nm, and

subjecting the substrate having the resist pattern formed thereon ~~is subjected~~ to dry etching
using a fluorine-containing compound having 4 to 6 carbon atoms and at least one unsaturated bond
selected from the group consisting of a triple bond, a double bond and both a double bond and a
triple bond as an etching gas, wherein the fluorine-contacting compound having the triple bond is
one selected from the group consisting of perfluoro-1-butyne, perfluoro-1-pentyne, perfluoro-2-
pentyne, perfluoro-1,3-pentadiyne, perfluoro-3-hexyne, perfluoro-1, 3-hexadiyne, perfluoro-1, 4-
hexadiyne, perfluoro-1, 5-hexadiyne and perfluoro-2, 4-hexadiyne.

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Claim 2 (original): The dry etching method according to claim 1, wherein the resist film is formed from a high molecular weight compound containing 0% to 10% by weight of repeating units having an aromatic ring structure.

Claim 3 (Cancelled).

Claim 4 (Currently Amended): The dry etching method according to claim 1, wherein the fluorine-containing compound having 4 to 6 carbon atoms and at least one unsaturated bond is perfluoro-2-pentyne ~~perfluoro-2-pentyne~~.

Claim 5 (Currently Amended): The dry etching method according to claim 1, wherein the fluorine-containing compound having 4 to 6 carbon atoms and at least one unsaturated bond is at least one kind of fluoropentene selected from 1,1,1,2,4,4,5,5,5-nonafluoro-2-pentene, 1,1,1,3,4,4,5,5,5-nonafluoro-2-pentene ~~1,1,1,3,4,4,5-nonafluoro-2-pentene~~ and perfluoro-2-pentene.

Claim 6 (Previously Presented): The dry etching method according to claim 1, wherein the dry etching is carried out under irradiation with plasma having a plasma density of at least 10^{10} ions/cm³.

Claim 7 (Currently Amended): A dry etching gas comprised of a fluorine-containing

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compound having 4 to 6 carbon atoms and at least one unsaturated bond, and used for dry etching for a resist film forming a resist pattern having a minimum line width of not more than 200 nm at irradiation with radiation having a wavelength of not more than 195 nm; said fluorine-containing compound has 4 to 6 carbon atoms and at least one unsaturated bond being selected from the group consisting of a triple bond, a double bond and both a double bond and a triple bond, wherein the fluorine-containing compound having the triple bond is one selected from the group consisting of perfluoro-1-butyne, perfluoro-1-pentyne, perfluoro-2-pentyne, perfluoro-1,3-pentadiyne, perfluoro-1,4-pentadiyne, perfluoro-1-hexyne, perfluoro-2-hexyne, perfluoro-3-hexyne, perfluoro-1,3-hexadiyne, perfluoro-1,4-hexadiyne, perfluoro-1,5-hexadiyne and perfluoro-2,4-hexadiyne.

Claim 8 (Cancelled).

Claim 9 (Currently Amended): The dry etching gas according to claim 7, wherein the fluorine-containing compound having 4 to 6 carbon atoms and at least one unsaturated bond is perfluoro-2-pentyne ~~perfuloro-2-pentyne~~.

Claim 10 (Currently Amended): The dry etching gas according to claim 7, wherein the fluorine-containing compound having 4 to 6 carbon atoms and at least one unsaturated bond is at least one kind of fluoropentene selected from 1,1,1,2,4,4,5,5,5-nonafluoro-2-pentene, 1,1,1,3,4,4,5,5,5-nonafluoro-2-pentene ~~1,1,1,3,4,4,5-nonafluoro-2-pentene~~ and perfluoro-2-pentene.

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Claims 11-12 (Cancelled).